古月居 GYH.AI ROS

ROS入门
21讲

19.launch启动文件的使用方法

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• Launch文件

```
<launch>
  <!-- local machine already has a definition by default.
       This tag overrides the default definition with
       specific ROS_ROOT and ROS_PACKAGE_PATH values -->
  <machine name="local_alt" address="localhost" default="true" ros-root="/u/user/ros/ros/" ros-package-path="/u/user/ros/ros-pkg" />
  <!-- a basic listener node -->
  <node name="listener-1" pkg="rospy_tutorials" type="listener" />
  <!-- pass args to the listener node -->
  <node name="listener-2" pkg="rospy_tutorials" type="listener" args="-foo arg2" />
  <!-- a respawn-able listener node -->
  <node name="listener-3" pkg="rospy_tutorials" type="listener" respawn="true" />
  <!-- start listener node in the 'wg1' namespace -->
  <node ns="wg1" name="listener-wg1" pkg="rospy_tutorials" type="listener" respawn="true" />
  <!-- start a group of nodes in the 'wg2' namespace -->
  <group ns="wg2">
    <!-- remap applies to all future statements in this scope. -->
    <remap from="chatter" to="hello"/>
    <node pkg="rospy_tutorials" type="listener" name="listener" args="--test" respawn="true" />
    <node pkg="rospy_tutorials" type="talker" name="talker">
      <!-- set a private parameter for the node -->
      <param name="talker_1_param" value="a value" />
      <!-- nodes can have their own remap args -->
      <remap from="chatter" to="hello-1"/>
      <!-- you can set environment variables for a node -->
      <env name="ENV_EXAMPLE" value="some value" />
    </node>
  </group>
</launch>
```

Launch文件：通过XML文件实现多节点的配置和启动（**可自动启动ROS Master**）

Launch文件语法

```
<launch>
    <node pkg="turtlesim" name="sim1" type="turtlesim_node"/>
    <node pkg="turtlesim" name="sim2" type="turtlesim_node"/>
</launch>
```

<launch> launch文件中的根元素采用<launch>标签定义

<node>

启动节点

<node pkg="package-name" type="executable-name" name="node-name" />

- pkg：节点所在的功能包名称
- type：节点的可执行文件名称
- name：节点运行时的名称
- output、respawn、required、ns、args

Launch文件语法

参数设置

<param> / <rosparam>

设置ROS系统运行中的参数，存储在参数服务器中。

```
<param name="output_frame" value="odom"/>
```

- name：参数名
- value：参数值

加载参数文件中的多个参数：

```
<rosparam file="params.yaml" command="load" ns=“params" />
```

<arg>

launch文件内部的局部变量，仅限于launch文件使用

```
<arg name="arg-name"  default="arg-value" />
```

- name：参数名
- value：参数值

调用：

```
<param name="foo" value="$(arg arg-name)" />
<node name="node" pkg="package" type="type " args="$(arg arg-name)" />
```

Launch文件语法

重映射

<remap >

重映射ROS计算图资源的命名。

<remap from="/turtlebot/cmd_vel" to="/cmd_vel"/>

- from：原命名
- to：映射之后的命名

嵌套

<include>

包含其他launch文件，类似C语言中的头文件包含。

<include file="$(dirname)/other.launch" />

- file：包含的其他launch文件路径

* 更多标签可参见：http://wiki.ros.org/roslaunch/XML

Launch示例

```xml
<launch>
    <node pkg="learning_topic" type="person_subscriber" name="talker" output="screen" />
    <node pkg="learning_topic" type="person_publisher" name="listener" output="screen" />
</launch>
```

simple.launch

```xml
<launch>

    <param name="/turtle_number"   value="2"/>

    <node pkg="turtlesim" type="turtlesim_node" name="turtlesim_node">
        <param name="turtle_name1"   value="Tom"/>
        <param name="turtle_name2"   value="Jerry"/>

        <rosparam file="$(find learning_launch)/config/param.yaml" command="load"/>
    </node>

    <node pkg="turtlesim" type="turtle_teleop_key" name="turtle_teleop_key" output="screen"/>

</launch>
```

turtlesim_parameter_config.launch

Launch示例

```
<launch>

   <!-- Turtlesim Node-->
   <node pkg="turtlesim" type="turtlesim_node" name="sim"/>
   <node pkg="turtlesim" type="turtle_teleop_key" name="teleop" output="screen"/>

   <node pkg="learning_tf" type="turtle_tf_broadcaster" args="/turtle1" name="turtle1_tf_broadcaster" />
   <node pkg="learning_tf" type="turtle_tf_broadcaster" args="/turtle2" name="turtle2_tf_broadcaster" />

   <node pkg="learning_tf" type="turtle_tf_listener" name="listener" />

</launch>
```

start_tf_demo_c++.launch

```
<launch>

    <include file="$(find learning_launch)/launch/simple.launch" />

    <node pkg="turtlesim" type="turtlesim_node" name="turtlesim_node">
        <remap from="/turtle1/cmd_vel" to="/cmd_vel"/>
    </node>

</launch>
```

turtlesim_remap.launch

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